



TAMIL NADU CURRICULUM FRAMEWORK - 2025
PROPOSED DRAFT SYLLABUS, PEDAGOGICAL APPROACHES AND ASSESSMENT STRATEGIES
CLASSES 6, 7 AND 8 MATHEMATICS

Children enter into the upper primary stage with a wide range of experiences on numbers and number operations and their applications in real life situations based on play, activities and working with concrete objects and materials. Their foundational numeracy skills form the strong foundation for building the higher mathematical concepts. At the upper primary stage, learners experience the transition from concrete to abstract and symbolic reasoning. They get the opportunity to connect mathematical concepts, computational thinking and mathematical language, symbols, representations with everyday situations. The children at this stage learn numbers and their relations, algebra, math in daily life, geometry, measurements, statistics, different patterns, contributions of Mathematicians and interdisciplinary nature of mathematics with other subjects. To ensure the learning of these concepts, **6 curricular goals** and **19 competencies** have been designed for classes 6 to 8.

PROPOSED DRAFT SYLLABUS - MATHEMATICS (CLASSES 6, 7 & 8)

CG-1 Understands and classifies numbers into whole numbers, integers, and fractions, and explains their properties using examples.			
COMPETENCY	CONTENT		
	CLASS-6	CLASS-7	CLASS-8
C-1.1 Understands and applies number systems and numerical relationships by representing, estimating, reasoning and performing operations with large numbers, and expresses them in scientific notations using exponents and powers		Large Numbers and Their Basic Operations • Formation of large numbers • Place Value Chart • Indian and International system of numbers • Use of large numbers in daily life situations (Fundamental Operations) • Estimation of Numbers – Exact and approximate values.	Squares and Square Roots • Square numbers, perfect square, Some more special properties of square numbers (Triangular numbers) • Square Root (Square root through Prime Factorisation, Finding the square root of a number by Long Division Method) Cubes and Cube Roots • Cubes and Perfect cubes • Properties of cubes of numbers • Cube Roots • Cube root of a given number by Prime Factorisation Exponents, Powers, and Scientific Notation • Exponents and Powers

			• Powers with positive exponents, Powers with zero and negative exponents • Expanded form of numbers using exponents • Laws of Exponents • Scientific Notation
C-1.2 Understands and applies factors, multiples, prime factorisation, divisibility rules, HCF and LCM to solve real life problems	Factors and Multiples • Common Factors • Common Multiples Prime and Composite Numbers • Prime Numbers • Prime Factorisation - Division Method, Factor Tree Method • Composite Numbers • Rules for Test of Divisibility for 2, 4, 8; 3, 6, 9; 5, 10 • Highest Common Factor (HCF) • Least Common Multiple (LCM)		
C-1.3 Understands integers and their representation on the	Integers • Introduction of Integers and their representation on a number line, more	Integer Operations and Their Applications	

number line; Compares, orders, and relates integers using concepts of opposites, predecessors, and successors; and applies the arithmetic operations and their properties to solve real-life problems	situations on Integers, opposite of a number • Predecessor and Successor of an Integer • Comparing Integers • Ordering of Integers • Addition, Subtraction of Integers and life-oriented problems	• Multiplication and Division of Integers and life-oriented problems. • Properties of Integers	
C-1.4 Compares, represents, and performs operations on fractions and decimal numbers; conversion of fractions to decimal forms and vice-versa and solves real-life problems	Comparing Fractions and performing operations on them • Fractions, Equivalent Fractions • Proper, Improper and Mixed Fractions • Comparison of Fractions • Addition and Subtraction of Fractions	Fractions and Decimals • Multiplication and Division of Fractions • Problems Involving Fractions in real-life situations • Decimal Numbers • Conversion of Fractions to Decimals and vice versa • Locating and Comparison of Decimals • Rounding off Decimals • Operations on Decimal Numbers	

		• Estimating sum and Difference of Decimals/Approximation	
CG-2 Understands the concepts of variables, constants, coefficients, expressions, and equations (one variable), and applies them to solve real-life problems.			
C-2.1 Understands variables as generalized numbers, frames algebraic expressions.	Introduction to Algebra • Patterns • Arithmetic expressions • Framing Algebraic expressions • Simplifying Algebraic expressions		
C-2.2 Understands the structure of algebraic expressions by identifying terms, coefficients, variables, and constants; distinguishes like and unlike terms; performs arithmetic operation of algebraic expressions		Algebraic Expressions • Algebraic expressions and Terms • Addition, subtraction, Multiplication and Division of Algebraic Expressions	
C-2.3 Constructs and solves linear equations.			Linear Equations • Equations: Linear Equation in One Variable

			• Word problems that involve linear equations
C-2.4 Applies algebraic identities and factorisation techniques to simplify expressions and solves problems			Algebraic Identities • Distributive Property, Identities, Geometrical proof of Identities: $(x + a)(x + b)$, $(a + b)^2$, $(a - b)^2$, $a^2 - b^2$ • Factorisation using identities and Application of Identities
CG-3 Builds conceptual clarity in ratio, percentage, and profit-loss, and applies them effectively for decision-making and problem-solving in daily life and mathematical situations.			
C-3.1 Applies ratio, proportion, percentage, interest, and variation concepts to interpret and solve real-life problems; uses unitary and proportional reasoning to makes accurate calculations related to profit-loss, discount and percentage		Ratio and proportion • Ratio • Properties of Ratio • Ratios in simplest form • Equivalent Ratios • Comparison of Ratios • Proportion, Proportionality Law • Unitary Method	Percentage and Its Applications • Fraction as Percentage • Profit, Loss, Discount, Overhead Expenses • Taxes Simple Interest and Variation • Simple and Compound Interest • Applications of Compound Interest • Variation: Direct and Inverse Variation

			Compound Variation
CG-4 Understands the properties and theorems associated with basic two-dimensional (2D) and three-dimensional (3D) shapes, develops formulae, and applies them in practical situations.			
C-4.1 Identifies and represents points, lines, line segments, and rays; distinguishes between parallel and perpendicular lines; and applies these concepts to describe, draw, and interpret geometric figures and real-life situations	Points and Lines	Parallel and Perpendicular lines	
C-4.2 Identifies, measures, and relates angles formed by lines and transversals; classifies and analyzes triangle based on sides and angles; and applies angle and triangle properties including angle sum,	Angles - Basic Elements of an angle, Naming Angles - Special Angles (Straight Angle, Right Angle, Acute angle, Obtuse Angle and Reflex angle) - Angle measurement using Protractor	- Transversal - Corresponding angles - Alternate angles Triangles - Triangle - Basic Elements of a Triangle - Triangle Inequality property - Types of triangles	

triangle inequality, and exterior angle properties to interpret geometric figures and solves problems logically	• Complementary angles and supplementary angles	• Application of Angle Sum Property of Triangle • Exterior Angles, Properties of Exterior Angle of a Triangle	
C-4.3 Classifies and analyzes polygons and quadrilaterals based on their properties, explores three-dimensional shapes through their attributes and views, represents 3D objects in two dimensions.			Types and Properties of Quadrilaterals • Quadrilaterals • Types of quadrilaterals and their properties Exploring 3D Shapes • Identifies three-dimensional shapes such as cube, cuboid, parallelepiped, cylinder, cone and know their attributes. • Views of 3D. Using two-dimensional representations of three-dimensional objects to visualise and solve problems.
C-4.4 Constructs and analyzes basic geometrical figures including line segments,	• Construction of line segment, Angles, Squares and Rectangles	• Construction of parallel lines, perpendicular lines	• Construction of Parallelogram, Rhombus and Trapezium

parallel and perpendicular lines, angles, perpendicular bisectors, angle bisectors, triangles and quadrilaterals using appropriate instruments with specified properties		• Construction of perpendicular bisector of a line and angle bisector • Construction of Triangles	
C-4.5 Identifies congruent shapes and differentiates them; applies criteria for congruent triangles to solve geometric problems		• Congruence of Triangles	
C-4.6 Understands the Pythagoras' theorem through visual proof			• Right-angled triangle (Visual proof) and Pythagoras Theorem
C-4.7 Explores the types of symmetry through geometric transformations	• Reflection Symmetry • Rotation Symmetry		
CG-5 Understands the concepts of perimeter and area of two-dimensional shapes and applies them in daily life.			
C-5.1 Understands and applies formulae for perimeter and area of 2D	Perimeter and Area • Perimeter and area of a square and rectangle.	Perimeter and Area • Perimeter and Area of a Triangle	Perimeter and Area • Area of Parallelogram, Rhombus and Trapezium

shapes including squares, rectangles, triangles, and combined shapes and area of quadrilaterals			• Area and Perimeter of combined shapes
CG-6 Collects and organizes data from everyday life situations and interprets them using tables and graphs.			
C-6.1 Organizes ungrouped data using frequency distribution tables and represents data using pictographs, bar graphs, line graphs.	Frequency table and Pictographs • Frequency distribution table for ungrouped data • Representation of data using Pictograph, drawing pictograph, Interpreting pictograph	Bar and Line Graph • Representation of data using Bar Graph, Drawing and Interpreting the Bar Graph • Line graph	
C-6.2 Calculates and applies measures of central tendency			Measures of Central Tendency (ungrouped data) • Arithmetic Mean • Median • Mode

Pedagogical Approaches

Mathematics learning at this level shifts away from rote procedures toward **constructive, experiential, and inquiry-based approaches**. The **Concrete–Pictorial–Abstract (CPA)** progression helps learners build concepts meaningfully, first through hands-on materials, then through diagrams or models, and finally through symbolic forms. Students investigate, gather information, organise data, identify patterns, and draw conclusions and they become active participants in constructing knowledge with teachers performing the role as facilitators. These approaches develop student’s mathematical thinking, creativity, reflection, and ownership of learning.

Learning is rooted in **real-life contexts** and integrated with Science, Social Science, Arts, and Technology. Tasks such as measuring spaces, designing layouts, collecting data, and solving practical problems help students view mathematics as a tool for understanding the world. **Collaborative learning** through group activities, math labs, and reflective discussions strengthens the learner’s communication and reasoning abilities. Digital tools such as Geo-Gebra, simulations, and quizzes enhance visualization and self-paced learning.

Upper primary pedagogy aims to nurture **logical reasoning, visualization, communication, pattern recognition, generalization, and the ability to apply mathematics in real-life contexts**. Thus, the effective pedagogy involves moving from **hands-on experiences** to **pictorial representations**, and finally to **formal abstract concepts**, ensuring conceptual clarity at every step.

Assessment Strategies

At the upper primary stage, assessment will focus on applying mathematical facts, identifying patterns, generalising results, and justifying the reasoning. Students are expected to argue logically about the truth or falsity of mathematical statements, understand the mathematical ideas based on numbers and operations, math in daily life, algebra, geometry, measurement, statistics and handle increasing levels of abstraction with confidence.

Assessment must also ensure that students' apply learned mathematics concepts in unfamiliar situations and real-life contexts. For effective evaluation, teachers should use on **competency-based assessment**. For an example, when assessing the understanding of area and perimeter of rectangles, teachers may design group tasks, observe discussions, decision-making, problem-solving strategies, and peer learning. Follow-up questions, self-assessment, and peer assessment provide additional insights into students' conceptual understanding, collaborative skills, and ability to reason mathematically. Also, assessment in daily classroom activities includes observation checklists, skill rubrics, and performance indicators. Holistic assessment also includes real-life projects such as designing a mini eco-park, math fair exhibits demonstrating geometry and measurement concepts.